New Jersey Housing and Mortgage Finance Agency

Special Needs Application Design Checklist

Reference Guide

June 4, 2006

This section of the Guidelines Supplement provides additional information on the items and concepts outlined in the Checklists. The information is organized in the same format as the Checklists.

User Needs Documentation

Sustainability Documentation

Design Excellence Documentation

USER NEEDS DOCUMENTATION

Introduction

Everyone wants and deserves housing that is safe, comfortable, offers privacy and supports recovery wellness and community integration. The provision of these basic housing elements for persons with special needs can present a challenge. The best practice in design considers the fit between the individual on his or her environment and takes into consideration the unique "user needs" of the residents.

But what exactly are the special needs that need to be considered when designing and building for these housing consumers? The answer is that they cover a wide range of issues. Some apply to anyone in the general population who needs housing. Others are characteristics of specific sup-populations of special need consumer groups. And still other needs cut across different special needs groups.

A major goal of NJHMFA is to provide high quality housing options to persons with histories of mental illness, with lifelong intellectual/developmental disabilities, to those with a history of homelessness, and other special need consumer groups. The following general design considerations are presented to encourage developers to integrated thoughtful design features into project development to create the best possible living environment for the intended residents and tenants.

Mental Illness-Homeless-Intellectual/Developmental Disabilities

Because of the correlation between homelessness and mental illness, with many undomiciled persons also having histories of mental illness, the special considerations for these two consumer groups are presented together. However, many of these needs also apply to consumers with intellectual/developmental disabilities.

The residential histories of both the chronically mentally ill and the homeless are equally unstable. Homeless individuals have direct experience with the street and/or shelters. In addition to street and shelter living, persons with serious mental illness may also have residential experiences in psychiatric hospitals, psychiatric units in general hospitals, and halfway houses.

Life in all of these settings is frequently characterized by:

-a lack of safety and protection from harm from external sources (outside the building or on the street)

-insecurity and a lack of protection from dangerous, volatile, and unpredictable individuals inside the building

- inadequate personal space and privacy. Their private space bubble is continually compromised by the sheer numbers and close proximity of other people sharing the same restricted environment

-a lack of spatial ownership ("my home," "my castle," etc.)

-minimal or no control over the physical and social environment and the ability to regulate environmental stimulation.

The precariousness of these settings has direct consequences on the way people with special needs perceive and use their environment. The following needs are "the special needs" that should be addressed by sponsors and project developers.

Site and Building Considerations

- **The need to feel safe and secure**
  Coming from the dangers of the street or a shelter, consumers have a strong need to feel safe and that the street is "not coming in on them." Consumers need to feel that they are protected from the drugs, crime, violence, and unpredictability of their former environments. This need has direct implications for the site selection and the building security. As mentioned in the preceding checklist, the housing should provide:

  - Location - To every extent feasible, the site should be in a safe, low crime area.
  - Security system — Security should be state of the art and have a highly visible presence to deter crime.
  - The security system and design should it easy to monitor the interior, exterior, and all entrances to the building.
  - The design of the building should make it easy to screen visitors before they access the building. .

- **Image: The need not to feel stigmatized or a sense of being "different"**
  Homelessness and mental illness are still stigmatizing conditions in American society. In order not to feel labeled or "different" from their neighbors. the building should:
  - Blend in with size and scale of neighboring buildings
  - Be constructed in a residential area (not in or bordering an industrial setting)
  - Use design elements and materials that are associated with residential architecture, and
  - Blend in with the architectural feel or style of buildings in the neighborhood (If there is one), using similar design elements.

- **The need to overcome negative experiences/associations with institutions**
  Because of consumer's negative experiences and associations with institutional settings, the new housing should appear as a typical residential building. The exterior, interior, and living units should look like high quality market-rate housing, which meets or exceeds the quality of the housing in the neighborhood. The use of typical residential building materials and amenities should be encouraged to convey a sense of normalcy. And while durability and ease of maintenance are important considerations, materials should not look like they selected with that sole purpose in mind.

- **The need for community access**
  Many consumers either do not drive or cannot afford automobiles. Consequently, the building site should provide safe and easy access to grocery and convenience stores, pharmacies (many consumers are on multiple medications) and other sources of health care, as well as shops, houses of worship, affordable restaurants and fast food establishments. This access creates a sense of normalcy, provides opportunities for

recreation and other meaningful activities, makes it more convenient to maintain a household, and fosters community inclusion. The site should also offer access to public transportation.

- **The need for accessibility/universal design**
  Somewhere between 15-20% of the non-institutionalized American population experiences a condition that limits their ability to perform one or more life functions, such as their ability to walk without assistance or mobility aid. These limitations can be physical, sensory, mental, or intellectual. Because disability or functional limitations often do not exist in isolation, mental health, homeless, or developmentally disabled consumers may also experience physical or mobility limitations as well. Persons with disabilities, to every extent possible, should be able to use all areas of the building—both interior and exterior—that are available to persons without disabilities. In addition, since a primary goal of the Trust is to provide permanent housing, the housing should contain physical support features necessary to allow consumers to age in place. For these reasons, the need for accessible, barrier free design is critical.

- **The need for social interaction and activity participation options**
  The facility should provide consumers with spaces and options that will enable them to maximize choice and to participate in an activity or to interact with neighbors without demanding it. Enforced interaction leads to withdrawal and isolation. In addition, boredom and confinement are real concerns. The housing should provide opportunities and appropriate locales for formal and informal interaction with housemates or other tenants in the building and for visiting with family and friends who do not live in the housing complex. Examples might include small conversation areas and discreet social-recreational spaces as opposed to a multi-purpose room, which often leads to use conflicts. There should be distinct common areas for a variety of both noisy/communal activities and more quiet/individual or small group activities (computers, support groups, reading, AA and NA meetings, etc.)

Dwelling Unit Considerations

- **The need for personal control over the environment**
  Consumers, like any housing resident, have a need to exercise control over their home environments. For many consumers, street life, shelters, hospitals and other institutions, and shared living arrangements for persons with developmental disabilities have made it difficult or impossible to achieve this need. The new housing should provide consumers with the ability to regulate the ambient qualities of their home environment. Personal control over heating, ventilation, air conditioning, should be provided along with the ability to regulate the amount and source of light in the house or apartment.

- **The need to cope with or regulate negative environmental stimulation**
  Persons with mental and intellectual disabilities may have low frustration tolerance and experience pronounced or exaggerated reaction to adverse environmental stimulation, such as noise. They also may come from environments, which offered them little, or no, opportunities to control noxious elements in their physical environments. Any new housing environment should minimize exposure to unwanted stimulation, such as noise from neighbors or HVAC systems, outside light, air drafts, odors, etc. or provide consumers with the ability to regulate these stimuli.

- **The need to compensate for compromised ability to perform or maintain activities of daily living (ADLs)**
  Consumers with mental and intellectual challenges often experience difficulty performing everyday activities. This is particularly true when they are not feeling well or are relapsing. During these periods of emotional duress, it becomes harder to shop, prepare meals, keep the home in order, and maintain personal hygiene.

    - **Food Preparation**
      Meal preparation can be particularly problematic. Many people with histories of mental illness and intellectual disabilities have limited cooking skills or they have lost the skills they once had. In addition, consumers often rely on public assistance for income. This assistance comes in the form of monthly checks. Consumers need to buy groceries when they have the funds or when food items are on sale. Perishable food items, once purchased, must then be properly stored. Similarly, consumers on restricted or limited diets need to store their special food items. Some consumers will also cook extra meals when they are feeling well and freeze them for use when they are feeling too poorly to prepare a meal.

      Food preparation can also be difficult when consumers have low levels of frustration or when they are depressed. The prospects of preparing a meal may seem overwhelming. For all of these reasons, the design and outfitting of the kitchen should make it easy to store groceries, prepare food, and cook.

    - **Housekeeping**
      Maintaining their homes can also be a challenge for consumers with intellectual and mental health issues. Housekeeping can be made easier with finishes that are

durable (without being institutional), easy to keep clean, and do not show the dirt. Adequate storage will also help consumers control clutter and make cleaning materials easily accessible.

- **Maintaining Personal Hygiene**
  Maintaining personal hygiene may also be a challenge to persons with deteriorating mental or intellectual status. Bathrooms should be conveniently located, accessible, and the fixtures should be easy to understand and operate.

- **The need for "My Own" space**
  Housing evaluations with consumers with histories of mental illness and homelessness have repeatedly emphasized the importance assigned to having one's own space ("my castle," "my bedroom," "my own kitchen and bath," etc.). This is easy to accomplish when consumers have their own individual apartments. It is harder to achieve this feeling when consumers share a unit or sleeping quarters, but it can and should be done. Bedrooms should be designed so each consumer has his/her own, clearly defined space.

- **The need for adequate space**
  It is important that consumers not feel confined in their homes or that they are living in a cell-like environment. It is also important for them not to feel that their entire living unit is viewable with a 90-degree turn of the head. Studio units should be designed to give the illusion of additional space and that there is more than one room to the apartment.

  For consumers with mental illness, as their health status improves and/or they distance themselves from their homelessness and/or shelter life, the desire for a larger dwelling grows. Since the Housing Trust is emphasizing permanent housing, the individual unit should be as large as possible. This will obviate the need to move a larger unit or may delay this decision long enough to give consumers sufficient time to regain their health and living skills. Also, as consumers stabilize or improve, they tend to accumulate more personal belongings. Adequate space will be needed to accommodate these possessions.

- **The need for privacy**
  The balance between privacy and isolation is a delicate one for persons with mental illness. The new facility should provide consumers for the option to have privacy, either in their own apartments or in areas within a shared residence. Privacy is non-existent in shelters, institutional settings, and the street and it can be seriously compromised in group living situations. As a result of this deprivation, privacy is a strong need among persons with mental illness and certain consumers with developmental disabilities. Individual units should be designed to maximize auditory privacy from neighbors and visual privacy from the apartment door to the unit. In shared units, opportunities should exist for private activities in the common areas and in the bedrooms (and, of course, in the bathrooms).

- **The need to minimize sources of hallucinations and delusions**
  Some consumers with mental illness suffer from auditory and/or visual hallucinations or other delusional states. Environmental features should be clear and unambiguous. Patterns in finishes and building materials should not trigger hallucinations, delusions, or

optical illusions. Shades, shadows, and glare should also be kept to a minimum, as should noise from HVAC systems.

- **The need to accommodate adverse reactions to medications**
  Certain psychotropic drugs cause adverse reactions or side effects. A typical problem is extreme sensitivity to heat and light. As specified above, consumers should have the opportunity to control the heat and air conditioning, as well as the amount of light that comes into their dwelling. In addition, any outdoor space should provide the opportunity for shaded seating.

- **The need to counteract tendencies toward physical inactivity and obesity**
  Weight gain from inactivity and poor eating habits is an issue among people with mental illness and developmental disabilities. This is particularly true during periods of depression, when symptoms are active, or when a specific medication is being used. Ideally, the new housing should offer opportunities for exercise---- both internally (exercise equipment) and externally (destinations to walk to and safe paths to get there, safe biking routes, etc.).

- **The need for support features**
  All special needs housing should incorporate supportive design elements to compensate for intellectual limitations, memory loss, and/or confusion from psychotrophic drugs, a confused mental state, and/or a physical limitation or disability. The potential for fires, floods, burns, falls, and inappropriate or misuse of appliances is a concern among special needs populations. The design and outfitting of the housing can be used to eliminate or minimize these safety concerns through sensitive selection of plumbing fixtures, appliances, environmental control units, locks, alarms, etc.

- **Special needs in shared living**
  Shared living environments can include community residences and supported apartments. They create distinct challenges for providing privacy, personal choice, and control over the physical and social environment. However, sensitive design can meet many of these challenges, as described above in the Design Checklist.

SUSTAINABILITY SUPPORT DOCUMENTATION

The following considerations are derived from the New Jersey Green Homes Office "New Jersey Affordable Green" (NJAG) program requirements. NJAG is a comprehensive affordable green building and energy efficiency program for developers building projects in coordination with Balanced Housing, HOME funds, and Low Income Housing Tax Credits. Projects under the Special Needs Housing Trust Fund may also be eligible for NJAG program subsidies. For more information, and for a copy of the most up to date Green Homes Resource Guide and Matrix consult the New Jersey Green Homes web site: http://www.state.nj.us/dca/dh/gho/index.shtml.

While incorporating all the features in the NJAG program is encouraged, the Special Needs Housing Trust Fund requires that the following features are considered (either implemented or narrated why not implemented) in any development seeking support under the program.

(NOTE: When incorporating sustainability related items into your project, it is important that base and incremental costs, where applicable, are noted. Whether or not a development is going through the formal Green Homes Program, applicants must submit incremental costs for all items where feasible.)

NJAG requirements focus on five major areas of concern: Siting and Land Use; Indoor Air Quality; Energy Efficiency; Resource Efficiency; and Operations and Maintenance. Each is important to the creation of healthy, sustainable housing.

Please be advised that additional energy efficient incentives may be available to you through the Board of Public Utilities Clean Energy Program. Details about these incentives, along with access to information about federal tax credits for energy efficiency and renewable energy can be found at http://www.njcleanenergy.com/. Information on water efficiency resources is available at the Department of Environmental Protection www.state.nj.us/dep/. To learn about the State's storm water regulations and best practices, refer to http://www.njstormwater.org/bmp_manual2.htm.

Site & Land Use

New construction can have a lasting impact on the local ecology and landscape. The location of a building's footprint affects natural drainage flows and may have adverse effects on neighboring land. The impervious surfaces buildings introduce typically reduce the opportunity for groundwater to be recharged and increase the burden on storm water systems. Building in ways that minimize site disturbance and preserve the existing landscape allows for storm water to infiltrate on site and recharge groundwater aquifers. Leaving existing vegetation undisturbed also provides erosion, sediment, and pollution control and reduces the need for irrigation, fertilizers, and pesticides.

Outdoors

- **Develop a plan for preserving existing trees, vegetation and street trees (if applicable) (SL-5)**
  For more information about preserving existing vegetation, refer to
  http://www.nj.gov/dep/parksandforests/forest/communit/
  http://www.state.nj.us/dep/dshw/recycling/trees.htm

- **Site building for passive solar gain (SL-6)**
  Where feasible, site new construction projects for passive solar strategies including orienting the building with respect to the sun's relationship to the site, distribute proper energy efficient windows in appropriate placement, and include passive shading such as suitable overhangs, awnings and/or deciduous trees.

- **Access to daylighting and view for every unit (IA-34)**
  Daylighting is a technique in which direct, diffused or reflected daylight is used to provide general or supplemental lighting. Daylighting and views can improve quality of life and moods, including greater satisfaction with the interior environment for building occupants and lower ongoing energy costs for the owner.

Indoor Air Quality

Considering the average American spends 90% of his or her time indoors, the EPA's recent proclamation that "indoor air pollution in residences, offices, schools, and other buildings is widely recognized as one of the most serious potential environmental risks to human health" shouldn't be taken lightly. Indeed, the EPA lists poor indoor air quality as the fourth largest environmental threat nationwide.

Healthy indoor air quality has grown in significance with the advent of air tight, energy-efficient homes which result in lower levels of fresh air intake, thus potentially leaving occupants of new housing more susceptible to rising pollutant levels from synthetic building materials, home furnishings, chemically-based cleaning products, mold toxins, and other sources. In addition, the lack of consideration for combustion appliances and moisture control in the home has contributed to the problem of indoor air quality.

Construction Quality Management

- **Protect ducts and HVAC system from dust during construction (IA-3)**

Ductwork is exposed to large amounts of dust, debris and other foreign material during the construction process. If ductwork is not properly flushed prior to occupancy, air quality and furnace performance will be affected negatively. The most effective preventative strategy to reduce unwanted, and possibly harmful, particulates in ductwork and interior ambient air is to cover the openings of new ducts and other HVAC equipment during all phases of construction. Typical materials that can completely seal duct openings include plastic film, lumber cutoffs, or waste building paper. Completely seal duct and HVAC equipment opening with plastic film and

tape, or other suitable material, until after final cleaning of unit. If a ducted system is used for construction heating, install MERV 8 filters on all return grills for the duration of construction.

Materials and Product Choices

- **Power vent or provide sealed combustion for all combustion devices (IA-7)**
  Full combustion burning of natural gas produces carbon dioxide, water vapor, nitrogen, carbon monoxide, and nitrogen oxides - products that can pose serious health and safety risks to occupants. Sealed combustion or power vented appliances isolate the designated supply of combustion air from the living space, virtually eliminating the risk of back-drafting these products of combustion into the home, where they can be ingested.

- **Use low VOC paints for interior finishes (IA-8)**

- **Use low VOC paints for all interior sealants and adhesives (IA-9)**
  The strong smell that paint, glues and other adhesives emit is from the evaporation of volatile organic compounds (VOC). Volatile organic compounds (VOC) contribute to poor indoor air quality problems, photochemical smog and include a variety of chemicals, which can have both short and long-term health effects. Some pigments contain toxic heavy metals such as cadmium and chromium. In addition, latex paints often require biocides and fungicides to protect paint from mold, mildew and bacteria. Most of the off gassing occurs during and in the first few days after application, but the health and comfort impacts on painters and occupants can be substantial during that period. Common effects are eye and respiratory irritation, headaches, dizziness, visual disorders, and memory impairment and in severe cases, cancer.

- **Encapsulate any non-UF-free particleboard in cabinets (IA-10)**
  Formaldehyde is an organic compound found in a broad range of products such as particleboards, upholstery, drapery, carpet, furniture, construction material, and dry clean clothes. Exposure to formaldehyde can cause wheezing and coughing, skin rashes, severe allergic reactions, and possibly cancer. If urea formaldehyde is in any particle or composite product incorporated into the interior of the project (cabinetry, countertops, trim, etc.), all exposed edges must be coated and sealed with water based polyurethane to prevent out-gassing of harmful toxins.

  (Note: There are a growing number of manufacturers producing particleboard composed of agricultural waste comprised without Urea Formaldehyde.)

- **Urea-formaldehyde-free fiberglass insulation (IA-11)**
  The most common form of insulation in homes today is fiberglass, fabricated primarily from silica sand, which is spun into glass fibers and held together with an acrylic phenol-formaldehyde binder. The phenol-formaldehyde binder which is widely used in fiberglass insulation can potentially a health risk to workers who inhale fibers, and fibers can also released after installed, so that it potentially continues to be a risk for inhabitants. There are brands of fiberglass insulation that can be specified that do not contain urea-formaldehyde as a binder.

- **Cellulose Insulation in walls (EE-14)**
  Fiberglass insulation can release particulate matter into the air, and some brands also release gaseous contaminants. This is especially a consideration for chemically sensitive people. One of the more reasonably priced alternatives to fiberglass insulation is cellulose spray in insulation, of which recycled newspaper is a major component.

  Other alternative insulation systems to consider are soy foam, recycled denim insulation, oyster shells.

Flooring

- **Use the Carpet and Rug Institute's Green-Label Plus, low-pile carpet, with 20% recycled content (IA-14)**
  In general, carpet is a difficult product to label as sustainable. It is used so often in such large amounts that the volume of waste generated from its high frequency of replacement does not equal its overall benefits. To reduce the waste stream and improve indoor air quality, limit carpet application in high use areas and utilize low VOC, durable carpet with at least 25% pre AND post consumer recycled content. The recycled content varies but most manufacturers use plastic bottles as the recycled content. Some manufacturers have a buy back program for developers to sell the purchased carpets back once the material is at the end of its life cycle. This is especially advantageous to developers responsible for maintaining and operating their projects.

- **Use carpet tile with recycled backing and facing (IA-14a)**
  Carpet pads are responsible for much of the off gassing attributed to carpets and constitute a large part of our landfill problem. The 'standard' pad is an amalgamation of brightly colored synthetic foam rubber, a petroleum based product. Similarly priced, low VOC alternatives include felt pads made from denim cotton scraps and garment scrap pads.

- **Use durable, healthy flooring in dining/living rooms, kitchens, baths, corridors and entries (IA-15)**

- **Use durable kitchen, bath and entry flooring tile (IA-15a); and/or**

- **Use durable kitchen and entry flooring linoleum (IA-15b)**
  The vast majority of carpet is made from petroleum based and synthetic materials, and there is a substantial toll on our landfills to produce the five billion pounds of carpet we use in the US each year. Using alternatives to carpets significantly improves the indoor air quality, as carpet traps dust and mold and can trigger asthma attacks. Alternatives to carpets such as linoleum and hardwood flooring can significantly reduce maintenance costs associated with cleaning and replacing carpets. Linoleum and bamboo are great alternatives that are rapidly renewable resources, using a production process with a very low environmental impact.

- **Use low-VOC carpet adhesives (IA-16)**

- **Tack down instead of glue down carpet (IA-18)**
  The adhesives used to glue down carpets generate Volatile Organic Chemicals, which contributes to poor indoor air quality. According to the EPA, 9% of the airborne pollutants creating ground level ozone come from VOC in paints and other adhesives.

Ventilation and Moisture Management

- **Use medium-efficiency (or higher) air filters in ducted forced air systems (IA-22)**
  When using forced air systems, filters can significantly improve indoor air quality by trapping dust and particles before they enter the living space. Pleated filters capture more particulates than typical furnace filters. MERV 8 filters are 30-35% more effective in eliminating air particulates than typical filters.

- **Automatic ventilation to each occupied room, and exhaust from kitchen, bath, and laundry (IA-24)**
  Install Heat Recovery Ventilation (HRV) with fresh air ducted to all bedrooms and living rooms. The function of an HRV is to recover the heat from exhausting stale air and temper incoming fresh air. Using advanced dual-chamber technology, these systems exchange stale air from inside your home with fresh outdoor air to ensure proper indoor air quality and control wintertime condensation.

Proper Handling and Avoidance of Toxics

- **Use non-mercury appliances (IA-27)**
  Do not use equipment with switches or controls that contain mercury. Exposure to mercury comes in various forms, depending on duration of exposure, age and health of person exposed, and the dose. Its effect on small children includes impaired neurological development and negative impacts on cognitive thinking, memory, attention, language, and fine motor and visual spatial skill. For more information on mercury, refer to http://www.state.nj.us/dep/dshw/lrm/mercury_brochure.pdf .

- **Use encapsulated insulation batts in basement ceilings (IA-28)**
  Encapsulated batts will fulfill this requirement. Insulation may be covered with permeable covering such as Tyvek or drywall with permeable paint, such as latex. Ceiling insulation must be adequately supported, which will reduce airborne particles.

- **Landscape for Integrated Pest management, to avoid pesticides (IA-30)**
  At this point in time, there is no universal consensus on protective measures aimed at managing pest infiltration because the long-term research has not been performed. However, basement slabs and perimeter foundation walls can be protected with impermeable membranes or stainless mesh in areas of known termite infestation. Also, keep plantings at least 24 inches from foundation. For more information about Integrated Pest management, refer to http://www.state.nj.us/dep/enforcement/pcp/pcp-imp.htm

Energy Efficiency

Buildings consume 36% of all the energy used in the US. This translates into over $220 billion to heat, cool, and power our buildings. Energy consumption is also a major cause of acid rain, smog, and global warming. Improving energy efficiency allows individuals and communities to become less vulnerable to price fluctuations. Heating and cooling is responsible for more than half of a home's energy consumption. Building homes to be more energy efficient maximizes resident comfort and health and reduces utility bills. The combined benefits of energy efficient heating and cooling systems, high performance windows and tight, well insulated ceilings and walls can reduce household energy use by 30% or more.

Building Envelope and HVAC

- **Ensure all units are Energy Star rated (EE-1)**
  See http://www.njenergystarhomes.com/ for details on the Energy Star program.

  Energy Star was introduced in 1992 by the U.S. Environmental Protection Agency (EPA) as a voluntary labeling program designed to identify and promote energy efficient products in order to reduce carbon dioxide emissions. Housing built to New Jersey Energy Star standards combine improved design with better overall construction that is at least 30% more energy efficient than the standard home. High quality construction features include added levels of insulation, high efficiency HVAC systems, and Energy Star labeled windows that help to create greater comfort and improved indoor air quality.

  Once a project is funded the developer must contact the appropriate Energy Star program provider to guide project through Energy Star process.

  For details, please review: http://www.njenergystarhomes.com/
  Contact Info: http://www.njenergystarhomes.html/consumer/contact_us.html

- **Provide mercury-free thermostats (EE-2)**
  Mercury switch thermostats represent the highest amounts of mercury in household appliances. Utilizing mercury free thermostats will help to eliminate the source of mercury in regional municipal waste stream. Exposure to mercury comes in various forms, depending on duration of exposure, age and health of person exposed, and the dose. Its effect on small children includes impaired neurological development and negative impacts on cognitive thinking, memory, attention, language, and fine motor and visual spatial skills.

- **Provide easy-to-use programmable thermostats and provide occupant training (EE-3)**
  Programmable thermostats and occupancy training can significantly reduce energy usage. Provide a seven-day, digital programmable thermostat that runs on 24volts of the HVAC system, with battery backup.

- **Size equipment within 20% of Manual J load calculation (EE-4)**
  Improper sizing of mechanical equipment leads to excess energy consumption and uncomfortable interior conditions. To ensure proper sizing of mechanical equipment, provide Manual J calculation for review for smaller buildings. For larger buildings, provide electronic input file for TRACE or HAP program for review. (Note: If equipment is being replaced, provide a balancing report). Manual J Load removes temptation to utilize "rule of thumb" calculations that often lead to oversized equipment.

- **Provide high-energy factor water heater(s) beyond Energy Star requirements (EE-5)**
  Install water heater with energy factor greater than 60% AFUE for gas fired units and 0.95 for electric.

- **Run all ductwork, except duct plenums, in conditioned space (EE-6)**
  Consideration should be given to run ductwork in conditioned space, rather than insulating ductwork in unconditioned spaces. Although furnace supply and plenums may be located in an unfurnished basement, supply and return ductwork should be located in conditioned space. All returns must be hard-ducted - no plenum or boxed joist returns are allowed. Plenums in basement must be insulated. Note that Energy Star requires mastic sealant on ductwork and plenums, which must be inspected prior to insulation. Air filter slot must be well constructed to avoid air leakage.

Lighting

- **Provide a minimum of one Energy Star lighting fixture per room and all provide Energy Star fixtures for all outdoor lighting (EE-9)**
  Energy Star lighting gives energy savings and longer light bulb life. Providing overhead fixtures in all rooms reduces use of inefficient fixtures once unit is occupied.

- **Provide daylight-sensor controls to turn off unneeded interior lights (EE-20)**

- **Provide lighting with automated occupancy controls in common spaces. (EE-21)**
  Lighting in community & meeting rooms, public bathrooms, and other common spaces, not including hallways, must have occupancy and daylight controls to eliminate energy loss when unoccupied. Common space DOES NOT include hallways and stairwells.

Appliances

- **Provide Energy Star refrigerators, clothes washers, and dishwashers. (EE-23-25)**
  All appliances installed are Energy Star rated including refrigerator, dishwasher, and washing machines.
  Note: Utilizing high efficiency compressors, better temperature control mechanisms and improved insulation and door seals, ENERGY STAR qualified refrigerators require only about half as much energy as models manufactured before 1993 and use at least 15% less energy than required by current federal standards.

Resource Efficiency

A typical new home creates anywhere from 3 to 5.2 pounds of waste per s.f, and roughly 80% of a homebuilder's waste stream is recyclable. The primary components of this waste stream are wood, drywall, cardboard, metals, and other materials. Reducing, reusing and recycling building materials conserves natural resources and reduces emissions associated with manufacturing and transporting raw materials. In addition to minimizing waste during construction, building homes to be more durable lengthens their usable life and minimizes maintenance costs.

Water is one of our most precious resources and drought conditions are increasingly common throughout the US. Water use in buildings includes a significant amount for landscaping. Designing landscaping using native species and drought tolerant plantings conserves water and minimizes landscaping maintenance costs. For general information about recycling, refer to http://www.state.nj.us/dep/dshw/recycling/.

Job-Site Operations

- **Construction waste management plan (RE-1)**
  Include a construction waste management plan in the specifications to ensure that all appropriate concrete, metals, woods, recyclable plastic bottles and cardboard from construction and demolition waste is recycled.

- **Recycle or salvage construction and demolition debris (RE-2)**
  Develop plan and protocol to properly sort and dispose of construction waste material separate from recycled material. Establish a system for daily collection and separation of materials designated to be recycled including concrete, metals, wood, recyclable plastics, bottles and cardboard, at a minimum. Specifications must include Waste Management Plan with Construction and Demolition waste percentage recycled specified.

  Contractor must include in each subcontract the requirement to sort the above materials and dispose of each in the designated container or debris pile. Recycling areas shall be clearly marked to avoid co-mingling of materials. A minimum of 50% project waste should be diverted from landfill. For construction and demolition debris recycling locations, refer to http://www.state.nj.us/dep/dshw/lrm/classbsch.htm

Building Envelope

- **Use EEBA window and flashing details (RE-3)**
  Please refer to http://www.buildingscience.com/resources/mold/Design_Build.pdf pages 12, 13 and 14 for recommended practices for window flashing.

- **50 year or more durable siding (eg. Fiber cement) (RE-4)**
  Specify durable siding materials, which minimizes maintenance expenses and disposal impacts.

Landscaping & Pavement & Stormwater

- **Use only native and/or drought-tolerant plants (RE-9)**
  For all landscaping, install native and/or drought tolerant plants throughout project site. Native species are those that occur in the region in which they evolved. Plants evolve over geologic time in response to physical and biotic processes characteristic of a region: the climate, soils, timing of rainfall, drought, and frost; and interactions with the other species inhabiting the local community. Thus native plants possess certain traits that make them uniquely adapted to local conditions, providing a practical and ecologically valuable alternative for landscaping, conservation and restoration projects.

  The benefit of growing plants within the region they evolved is that they are more likely to thrive under the local conditions while being less likely to invade new habitats. Native plants are well adapted to local environmental conditions, maintain or improve soil fertility, reduce erosion, and often require less fertilizer and pesticides than many alien plants. These characteristics save time and money and reduce the amount of harmful run-off threatening the aquatic resources of our streams, rivers, and estuaries. Refer to the NJ Native plant Society, www.npsnj.org for more information.

  - **High efficiency drip irrigation (RE-10)**
  - **Use rainwater collection for irrigation (RE-11)**
  - **Use pervious pavers for outdoor patios and walkways (RE-12)**
  - **Use porous pavers for roads and parking (RE-13)**

  Select a type of grass that can withstand drought periods and become dormant during hot, dry seasons. Install irrigation system controllers such as rain or soil moisture sensors, or use weather driven programming system. Include high efficiency nozzles and pressure regulating devices to maintain optimal pressure and prevent misting.

  High efficiency drip water irrigation can significantly minimize water use. Porous paving materials greatly minimize the impact on storm water runoff systems by allowing water to percolate into the ground rather than flowing down the street collecting pollutants. Designing building to collect rainwater in barrels, or to divert rainwater from rooftops directly onto landscaped areas takes advantage of natural site resources, reduces runoff, and minimizes water use. For information about residential water conservation, refer to www.h2ouse.org.

Recycling

- **Provide onsite-recycling centers located in common areas (RE-26)**
  When a township participates in a recycling program, recycling for residents should be as easy as throwing garbage away. Design buildings with easy access to exterior recycling stations that are well marked, easy to understand and accessible.

- **Provide recycling areas and containers in or near each kitchen (RE-27)**
  Provide and reserve space for a minimum 12x24" recyclable basket either near or in kitchen. Locations may include under sink, in an adjacent closet or built in drawers.

Operations and Maintenance

Once construction is complete, how well a building performs in terms of energy use, and occupant health, comfort and safety is impacted by building operation and maintenance. Educating residents regarding the proper use and maintenance of their home and its systems will provide optimum health benefits and ensure environmental and economic performance. Ongoing beneficial activities such as recycling and the use of healthy cleaning materials will further the impact of conscientious operations and maintenance. The key to successful building performance beyond cost effective, low maintenance design lies with an informed resident.

Education

- **Provide owner O&M manual and training for ownership units (OM-1)**
  A development's O and M department is the ongoing link between residents, building management, and the buildings themselves. The department is responsible for security, climate control and system maintenance, cleaning and landscaping. Providing a manual and training will put knowledge into the hands of those who can help maintain the safety and health of residents, and the financial and environmental performance of the development. Include manual in 3-ring binder illustrating high performance features with product manufacturer's manual and general information and concepts of green building and energy and resource conservation

- **Train tenants to use programmable thermostats (OM-2)**
  Provide hands-on training to tenants detailing thermostat functions, features and proper use. Program the thermostat with the tenants, with tenants doing the actual programming.

DESIGN EXCELLENCE SUPPORT DOCUMENTATION

Introduction

Design means many things to many people and "good design" is often different from one "eye of the beholder" to the next. Nonetheless, for the purposes of this Guidelines Supplement, we suggest that a project is well designed if it meets the following four basic criteria: Meets User Needs, Understands and Responds to its Context, Enhances its Neighborhood and is Built to Last. These four basic criteria form the backbone of HUD's Affordable Housing Design Advisor (www.designadvisor.org) and will serve as overall goals for projects built under the Special Needs Trust Fund program.

Meets User Needs
Well-designed projects understand the needs of their occupants and how these needs impact physical design. Section 1 of this Supplement provides a solid overview of the "special needs" of the populations to be served under the program.

Understands and Responds to Its Context
Although the "context" in which a housing development is brought to life includes socioeconomic, legal and regulatory issues, the physical context in which the project will be located is also critical. This context is made up of the key physical elements - streets, sidewalks, homes, yards, parks, playgrounds, etc. - that are present in the neighborhood surrounding the site of an affordable housing development.

How wide are the sidewalks? Are they completely paved or is there a grassy strip? What do the roofs of neighboring houses look like? Are they pitched or flat, gabled or hipped? What are the primary exterior materials? What are the main colors? Do most of the surrounding houses have porches? Patios? Decks? How is open space handled? Questions such as these can help define the physical context in which a new development will be located.

Based on the answers, two basic courses of action are possible. A developer can choose to incorporate many of the features of the surrounding neighborhood into his/her design, to help the project fit in and reinforce the existing fabric. Or, the developer can consciously choose not to replicate what's around his/her project and do something different. Either course of action is acceptable if the context has been systematically analyzed. The only unacceptable action is to proceed directly to the design stage without any context analysis at all.

Enhances Its Neighborhood
All projects, no matter how small, have a responsibility beyond simply meeting the needs of their users. They have a public responsibility to add to and enhance the neighborhoods in which they are built. This is why design is so critical.

Projects which meet minimal code requirements are just that - minimal. While they may provide better shelter than their occupants previously enjoyed, they do little to improve the communities in which they find themselves. Site plans are weak, landscaping is minimal or nonexistent, and simple amenities - like front porches or bay windows - are missing. The result is housing that

has missed a golden opportunity. It may provide a home for people in need, but it doesn't go the extra step and positively impact the neighborhood where those people live. Such positive impacts are critical to a project's long-term success - and better design is the key to creating them.

Any project that merely meets the needs of its users - no matter how well - and does nothing to improve the neighborhood where it is built cannot be considered to have achieved design excellence.

Built to Last
Inexpensive materials can make any project look "cheap." Quality materials and finishes, on the other hand, contribute to the longevity of a project and to its ability to appreciate - not depreciate - in value. They also make a project easier to maintain, potentially reducing operating costs. A well-designed project should do everything possible to include quality materials and finishes, within the cost constraints imposed by the budget.

Individual Design Considerations

PARKING
Parking is one of the most difficult issues to resolve in affordable housing development projects. It can overwhelm the best-designed buildings and open spaces, so its overall impact must be handled very carefully. Security is another important consideration, and parking areas should allow easy access and surveillance from the housing units. Vehicle/pedestrian interaction should also be carefully analyzed, with a focus on minimizing conflicts.

Parking is a fact of life for any affordable housing development project, and it takes a focused design effort to avoid letting it dominate a property or the streetscape. Nonetheless, properly handled parking can fade into the background and still remain fully functional, accessible and safe.

- **Overall Impact**
  Avoid letting garages, driveways and parking lots dominate the streetscape. Consider placing them at the rear or side of the site to allow a majority of dwelling units to “front on” the street. Consider planting trees and shrubs to soften the overall impact of parking areas and to provide shade and noise reduction. At buildings with parking garages, avoid large areas of blank wall facing the street. Consider incorporating decorative elements above the garage door to soften its visual impact. Consider improving unavoidable blank walls with decorative artwork, display cases, vines, and good quality durable materials to minimize graffiti and deterioration.

- **Access and Surveillance**
  Provide locations for parking that minimize walking distance between dwelling units and cars and that allow for casual surveillance of cars from a number of different units. Avoid remote parking. Avoid large lots. Consider breaking them into multiple, smaller lots to enhance safety and accessibility and minimize the aesthetic impact of large, unbroken rows of cars. Locate handicapped and elderly parking with immediate access

to their respective units. Locate visitor drop off and parking near main entrances and clearly mark all visitor parking spaces.

- **Vehicle/Pedestrian Interaction**
  Design to minimize conflicts between vehicles and pedestrians. Consider separating bicycle and pedestrian paths from vehicular traffic. Consider linking open spaces so that they form an uninterrupted network of vehicle-free areas. Avoid parking layouts that erode a project's open space until only "leftover" areas are available for pedestrian use. Consider traffic calming strategies to slow down cars within the project.

- **Security**
  In underground or multi-story parking structures, provide a limited number of secure entry points. Ensure that all parking areas are well lighted, but avoid lighting strategies that cause glare or otherwise negatively impact surrounding buildings. Consider locating parking in areas that can be informally observed by individuals walking by.

PUBLIC OPEN SPACE

Public open space - shared outdoor areas intended for use by all residents - should be as thoughtfully designed as any other "space" in a development. It is helpful to think of open spaces as outdoor rooms and to design and furnish them with the same care you would any room in your home. Such rooms should have clear boundaries so that residents and visitors understand what is public and what is private. Surveillance is also important, and as many units as possible should have visual access to open spaces.

Sensitively designed public open space can turn a good development into a great one, providing a lasting amenity for residents and neighbors alike.

- **Outdoor Rooms**
  Think of public open space – shared outdoor areas intended for use by all residents – as "outdoor rooms," and design them as carefully as any other rooms in the project. Avoid undifferentiated, empty spaces. Consider the types of activities that will occur in the "rooms," including cultural or social activities unique to specific user groups, and design the shared open space accommodate these activities.

- **Access**
  Provide direct access to open space from the dwelling units that the open space is intended to serve. At the same time consider designing in ways to control nonresident access to these spaces. When terraces or balconies are used as shared open space, consider locating so they serve as extensions of indoor common areas.

- **Boundaries**
  Provide clear boundaries between publicly controlled spaces (streets), community controlled spaces (shared open space) and privately controlled spaces (dwellings and private open space). Consider enclosing or partially enclosing open space with project building(s) to provide clear boundaries.

- **Surveillance**
  Provide visual access to shared open spaces from individual units, preferably from the kitchen, living room or dining room.

LANDSCAPING

Landscaping - too often treated as a secondary consideration or eliminated altogether due to cost constraints - is, in fact, a critical component of any successful development project and should be considered an essential part of the design process. A rich variety of plantings should be provided. Paved areas are necessary and should be designed as part of the landscape. Edges between paved and planted areas should be designed so the two realms work well individually and together. Paths and outdoor seating should fit the overall landscape plan and take into account how and when residents will use them. As always, the more storage - in this case for landscape maintenance equipment and materials - the better.

Landscaping can make or break a project. Done well, it complements and enhances a development and its neighborhood. Done poorly - or not at all - and the quality of a development is diminished, no matter how well the buildings are designed.

- **Landscaping is not a Secondary Consideration**
  Good landscaping is critical to the quality of any project. Consider how landscaping and planting will be handled from the very beginning of the design process. Avoid considering landscaping as an "extra" that can be added in at the end of the project or, worse, eliminated in the name of cost control.

- **Plantings**
  Provide as rich a variety of plantings – trees, shrubs, groundcover, and grass areas – as possible. Anticipate mature sizes and avoid crowding trees, shrubs and buildings. Use hardy, native species of trees and plants that are well suited to the project location and are easy to water and maintain.

- **Paved Areas**
  Recognize that some paved area will be necessary in family housing to facilitate children's play. However, large, empty paved areas should be avoided. Consider using alternative landscape approaches – plantings and grass – to break these areas up into smaller functional units.

- **Edges**
  Where planted areas, other than lawns, meet hard surfaces include some form of raised edge to contain the soil and discourage cutting across the bed. Consider designing the edges so they can also serve as outdoor seating areas.

- **Outdoor Seating**
  Outdoor seating should be an integral part of any landscape plan and should be thoughtfully designed and located. Avoid simply scattering seats at random through the site. Consider what the seating looks at and what looks at it. Consider how the seating is oriented with respect to the sun and breezes and whether it needs protection from rain or

wind. Avoid “one type fits all” solutions, particularly in larger projects. Consider providing different seating for different users.

- **Paths**
  Pedestrian paths and walkways are critical to the smooth functioning of any affordable housing project, particularly larger, multi-unit developments. Consider the wide range of uses that any path must accommodate – children, adults, bicycles, skate boards, shopping carts, walkers, pets, furniture moving, etc. – and design with this range of uses in mind. Avoid paths that are too narrow to accommodate multiple users at the same time. Consider rounded corners at all intersections and direction changes, especially in projects with children. Ensure that paths are well lighted so that users can see where they are going and be seen by other people. Consider designing path edges so that they encourage users to stay on the path and not trample on adjacent plantings (e.g. through changes in slope or materials or by providing raised edges). Remember that the shortest route from point A to point B is usually a straight line. Avoid forcing people to follow circuitous routes to their destinations or be prepared for the new, unplanned paths that will inevitably appear to accommodate occupant use patterns.

- **Storage**
  Provide adequate space to store landscape maintenance equipment and materials.

BUILDING LOCATION

How a building is placed on a site has a powerful impact on how a development is perceived by its neighbors and on how well it "works" for its residents. The site entry - where it is and how it looks - is critical to the public image of a development. Likewise the development's setback pattern can affect public perception of the project, either by reinforcing the pattern in the surrounding neighborhood or by consciously breaking that pattern. Finally, a building's placement on a site will influence how, and how much, the climate will impact the building.

How a building is placed on a site is one of the "big" early decisions in the design process. Getting it right makes every subsequent step that much easier.

- **Site Entry and Circulation**
  The entry to the site is critical to the public image of the development. Emphasize the main entrance and place central and shared facilities there if possible. Respect the street and locate buildings on the site so that they reinforce street frontages.

- **Setbacks**
  To the extent possible, maintain the existing setback patterns within the immediate vicinity of the building. Avoid locating a building far in front of or far behind the average setback lines of the four to five properties located on either side of the proposed project. Respect the prevalent side yard and rear yard setback lines prevalent in the area.

- **Climate Considerations**
  Consider placing buildings on the site so as to maximize solar access during cooler months and to control it during warmer months. Also consider maximizing natural

ventilation and access to views from within the site. Avoid a layout in which adjacent buildings obstruct one another. Design the building so that sun directly enters each dwelling unit during some part of the day year round.

BUILDING SHAPE

The overall size and shape of a new building(s) can have a huge impact on the surrounding neighborhood and on how a development is perceived by the community where it is located. The height of a new building is extremely important - too high and it can overwhelm its neighbors; too low and it can create a gap in the physical "fabric" of a neighborhood. The overall scale and massing of a new building should also try to match that of the surrounding neighborhood. The overall form of a new building should incorporate as much variety as possible and avoid large expanses of flat wall or roof.

Creating a building whose size and shape generally complement the size and shape of surrounding buildings will go a long way toward making a new development acceptable to its neighbors. At the same time it will reinforce the perception among residents that their housing is "just like everyone else's."

- **Building Height**
  Relate the overall height of the new structure to that of adjacent structures and those of the immediate neighborhood. Avoid new construction that varies greatly in height from other buildings in the area, except where the local plan calls for redeveloping the whole area at much greater height and density. To the extent feasible, relate individual floor-to-floor heights to those of neighboring buildings. In particular, consider how the first floor level relates to the street and whether this is consistent with the first floors in neighboring buildings.

- **Building Scale and Massing**
  Relate the size and bulk of the new structure to the prevalent scale in other buildings in the immediate neighborhood.

- **Building Form**
  Consider utilizing a variety of building forms and roof shapes rather than box-like forms with large, unvaried roofs. Consider how the building can be efficiently manipulated to create clusters of units, and variations in height, setback and roof shape.

BUILDING APPEARANCE

How a building looks is critical to its acceptance within a community and to the "pride of place" it creates among residents. A new building's image should not vary widely from that of its neighbors or from that of good quality middle class housing nearby. The windows, façade, roof shape, size and rhythm of openings, trim and details, and materials and color should be generally compatible with the surrounding neighborhood. The building should avoid appearing like one large, undifferentiated mass by incorporating as much visual complexity as possible.

What a development looks like says a lot about the developer who created it and the residents who occupy it. Every effort should be made to create a high quality, community-sensitive appearance for any affordable housing development.

- **Image**
  Avoid creating a building that look strange or out of place in its neighborhood. Consider a building image that that fits in with the image of middle income housing in the community where the project is located.

- **Visual Complexity**
  Consider providing as much visual and architectural complexity as possible to the building's appearance. Consider breaking a large building into smaller units or clusters. Consider variations in height, color, setback, materials, texture, trim, and roof shape. Consider variations in the shape and placement of windows, balconies and other façade elements. Consider using landscape elements to add variety and differentiate units from each other.

- **Windows**
  Maximize window number and size (within budget constraints) to enhance views and make spaces feel larger. Use minimum number of different size windows, but consider varying where and how they are used. Consider ways to screen and physically separate ground floor windows from walkways – through screens or plantings - to provide privacy.

- **Facade**
  Relate the character of the new building façade to the façades of similar, good quality buildings in the surrounding neighborhood or region. Horizontal buildings can be made to relate to more vertical adjacent structures by breaking the façade into smaller components that individually appear more vertical. Avoid strongly horizontal or vertical façade expression unless compatible with the character of the majority of the structures in the immediate area.

- **Roof Shape**
  Consider relating the roof forms of the new building to those found in similar, good quality buildings in the neighborhood or region. Avoid introducing roof shapes, pitches or materials not found in the neighborhood or region.

- **Size and Rhythm of Openings**
  Respect the rhythm, size and proportion of openings - particularly on the street facades – of similar, good quality buildings in the neighborhood or surrounding area. Avoid introducing drastically new window patterns and door openings inconsistent with similar, good quality buildings in the neighborhood or surrounding area.

- **Trim and Details**
  Trim and details can provide warmth and character to a building's appearance, particularly on street facades. Carefully consider the design of porch and stair railings,

fascia boards, corners, and areas where vertical and horizontal surfaces meet – for example where a wall meets the roof. Generally put trim around windows. Consider adding simple pieces of trim to the top and bottom of porch columns.

- **Materials and Color**
  Use materials and colors for the façade (including foundation walls) and roofing that are compatible with those in similar, good quality buildings in the surrounding neighborhood or region. Avoid introducing drastically different colors and materials than those of the surrounding area. Consider using materials that do not require repeated or expensive maintenance, especially those that residents can easily maintain themselves. Consider using materials with high levels of recycled content where possible.

BUILDING LAYOUT

How well a building is laid out will determine how well it "works" for residents, staff and visitors. Entries should be clearly defined, welcoming and secure. Central facilities and common rooms should be easy for all residents to get to and use. Likewise, support and service areas should be easy for management personnel to get to and use. Stairs, elevators, and access corridors serve as important public gathering places, not simply circulation, and should be designed accordingly. Finally, a building's layout should help, rather hinder security.

Building layout is a subtle but critical aspect of the overall design process. A design that pays close attention to the needs and use patterns of residents and staff will result in a building that is more comfortable to live in and easier to maintain.

- **Entries**
  Provide as many private, ground level entries to individual units as possible. Ensure that all building entries are prominent and visible and create a sense that the user is transitioning from a public to a semi-private area. Avoid side entries and those that are not visually defined. At all entries consider issues of shelter, security, lighting, durability, and identity. For apartment buildings, allow visual access from managers office and/or 24 hour desk. Allow visual access to ramps, stairs and elevators from the lobby. For buildings with clustered and individual unit entries, consider providing small "porch" areas that residents can personalize with plants, etc. Limit "shared entries" to less than eight households. Consider providing some form of storage – for strollers, bikes, shopping carts, etc. – at or close to all main entries.

- **Central Facilities and Common Rooms**
  Consider locating central facilities – such as community rooms and laundries - in a central part of the development or building. Common rooms should be linked to common outdoor space. Ensure that community rooms are comfortable, accessible, durable, and, most importantly, flexible places. Community room should have access to toilet rooms, a kitchenette, and should have good storage. Consider whether or not a childcare program will be provided and whether the community room will accommodate it. Provide access to daylight and natural ventilation in all common rooms.

- **Support and Service Areas**
  Carefully consider the design and location of key support/service areas such as the manager's office, maintenance rooms, janitor's facilities, mechanical equipment rooms and trash collection areas. Provide access to bathrooms and kitchens, and adequate space, furniture and storage for each of these uses, together with access to bathrooms and kitchens as appropriate. The manager's office should supervise the main entrance and should be located centrally, next to community and maintenance rooms. Provide screened trash collection areas that are convenient and easy to access from all of the units. Consider the path of travel of trash from source to removal area.

- **Ramps and Stairs**
  Ensure that both ramps and stairs are durable, attractive and safe. Avoid treating ramps and stairs as an afterthought. Instead, consider them, particularly entry stairs, as major design elements. Consider how they relate to the street and neighborhood, how they accommodate users and visitors, and what they "say" about the project and its occupants. Consider how the area under the stairs will look and be used. Ensure that all ramps and stairs can accommodate moving furniture without damage to finishes.

- **Elevators**
  Locate elevators in sight of manager's office if possible. Design adequate space in front of elevator to allow waiting and passage. Avoid corridors of excessive length; i.e. greater than 100 feet unbroken length. Break up long corridors with lobbies, lighting, benches, materials and color changes, offsets, and artwork. To the extent possible, provide corridors with access to natural daylight and ventilation. Ensure that all corridors can accommodate moving furniture without damage to finishes.

- **Security**
  Consider ease of visual and physical surveillance by the residents of the street, the main entrances to the site and the building, children's play areas, public open space and parking areas. Consider locating windows from actively used rooms such as kitchens and living rooms so that they look onto key areas. Also consider containing open spaces within the building layout and using the selection and layout of plant materials to enhance, rather than hinder, surveillance and security. Consider specific design strategies to maximize the security of the building, including adequate lighting, lockable gates and doors at all entrances to the site and the buildings, and video cameras and monitors.